

A Work Project, presented as part of the requirements for the Award of a Masters
Degree in Management from the NOVA School of Business and Economics.

A MARKETING PLAN FOR OQTOPUS IN THE SPANISH MARKET

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EXECUTIVE SUMMARY

This is an academic work developed in the context of the Master Degree in Management lectured by the Nova School of Business and Economics.

One of the goals of this work project was to apply some of the business and marketing concepts acquired during the master's academic year. Within the Market Technology Transfers' Field Lab, this thesis was an opportunity to simulate the real-life working environment in a company. To achieve this outcome I tried to put myself in the shoes of a Marketing Director that has to make a decision in what concerns to the brands or products he/she has under his/her responsibility.

In this particular case, my mission for this work project was to develop a marketing plan for Oqtopus, one of Displax's multi-touch products, for the Spanish market. In this sense, I will start with a brief presentation of Displax and its business, followed by the analysis of the macro and microenvironment of the company and the multi-touch industry. Thereafter, I will introduce the strategic triangle and the marketing plan for Oqtopus.

Finally, my research and study about the multi-touch industry, as well as the knowledge I achieved regarding Displax business due to the several contacts established through these months with Edigma/Displax Marketing Officer Pedro Fernandes, led me to include in this work my own considerations about what I consider relevant for Displax to carry on with its ambitious plan of growth, in a marketing context.

BRIEF COMPANY DESCRIPTION

DISPLAX™ is a Global Research Driven Leader in Interactive Technologies and a fledgling company that holds technology and marketing as its distinctive DNA, and

offers high-end innovative interactive technologies like finger interaction with holographic screens, as well as a wide range of displays, floor interaction, personalized interactive solutions, systems, projects and much more to come.¹

TOUCH TERMINOLOGY²

SITUATION ANALYSIS

1. INTERNAL ENVIRONMENT

I. Mission Statement

Displax goal is to be leader in touch marketing, interactive products, services and solutions, by establishing new trends in innovative communication.³

II. Resources and Capabilities

Displax has an internal R&D team, responsible for the creation of the interactive systems that will later be marketed under the DISPLAX™ brand. The programming and contents teams are responsible for the creation of the multimedia contents of the interactive systems, which include design, video and text, as well as Internet based applications.⁴

III. Previous performance

Displax has developed several projects since the launch of the first interactive system, DISPLAX™ Interactive Window, in 2004. OPTIMUS CONCEPT STORE was a

¹ www.displax.com

² Basic concepts of touch technology are explained in Appendix I

³ www.displax.com

⁴ www.displax.com

project developed for Optimus mobile telecommunications that features the Experience Block inside the store and the biggest interactive façade with holographic projection; MAR SHOPPING is an interactive Shopping Center, with more than 200 stores, using several Displax Interactive Systems.⁵

IV. Current offerings

The business market consists of all the organizations that acquire goods and services used in the production of other products or services that are sold, rented, or supplied to others⁶. Displax is currently operating in the business market and offers several products. Each of them has specific characteristics and benefits that make them fit diverse situations, according to the different market sectors and businesses. Through this marketing plan I will focus my attention in only one of Displax products: Oqtopus.

V. The technology (see Appendix I)

2. EXTERNAL ENVIRONMENT

I. Economic factors

Since Displax is operating in the business market and is willing to sell **Oqtopus** to diverse market sectors within the services sector – such as TV studios, Architecture & Design, Healthcare, Schools, Telecommunications, Finance, Real Estate, Shopping centers, Events, Advertising/Brand experience, Museums, Theatres and Art Galleries –, I looked closely to the structure of the Spanish economy in order to understand how

⁵ www.displax.com

⁶ Kotler, Philip, Keller, Kevin Lane, 12e, Marketing Management

attractive this sector would be.

The structure of the Spanish economy is that of a developed country, with the services sector being the main contributor to GDP with 71.09% in 2009 and presenting an increasing trend, followed by industry. These two sectors represent approximately 87% of Spain's GDP with agriculture's share representing a 2.6% of GDP ⁷ (see Table 1, Appendix II).

II. Technological factors

THE TOUCH SCREEN INDUSTRY

The touch screen industry is extremely diverse, with different companies pursuing several different technologies. There are over a dozen touch screen technologies. Resistive touch screen is the leader in terms of unit shipments and over 60 companies are manufacturing it. However, both surface and projected capacitive technologies have attracted numerous suppliers, and many companies are also pursuing multi-touch capabilities⁸.

According to DisplaySearch, the worldwide leader in display market research and consulting, there are more than 170 touch screen suppliers worldwide. Some companies supply one technology while others supply multiple, such as Elo/Tyco Electronics, 3M, or Touch International. In addition, some companies only produce controller ICs, while others manufacture entire modules, including the touch sensor and controller IC. Currently, about 50 suppliers are shipping multi-touch screens (see Table 2, Appendix II) using different technologies, which sustain that multi-touch penetration rate, is increasing. Microsoft's Windows 7 will support multi-touch,

⁷ www.spainbusiness.com

⁸ DisplaySearch Touch Panel Release, May 22, 2009

enhancing industry interest.

In its released *2009 Touch Panel Market Analysis Report*, DisplaySearch forecasts the total touch screen module market will grow to \$9 billion by 2015, from \$3.6 billion in 2008, with a CAGR of 14% (see Figure 1, Appendix II).

According to the same source, and looking deeper onto the multi-touch market, multi-touch module revenue was about \$793 million, or 22% of the total touch module revenues in 2008. Typically, multi-touch modules enjoy higher prices than single-touch, but with increasing competition prices will tend to decrease. The forecast for this market is that multi-touch will grow to about \$4.2 billion by 2015, 47% of total touch module revenues (27% CAGR) (see Figure 2, Appendix II).

TOUCH SCREEN MARKET DRIVERS

As Jennifer Colegrove, PhD, Director of Display Technologies at DisplaySearch notes, “touch screens are becoming widespread due to the ease of use and intuitive interfaces they enable, which can save time and increase productivity. Falling prices have also spurred adoption. Finally, touch screen devices are now perceived as cool and fun”. She also believes that over the next several years, touch screens will undergo strong growth in large-size applications, such as retail, ticketing, point of information and education/training, as touch screen penetration has been rapidly increasing in mobile phones, portable navigation devices, gaming and other applications. According to DisplaySearch, the following touch screen market drivers have been impelling this industry:

- ✓ Reduction of labor cost through customer self-service
- ✓ Easy and intuitive to use: Availability of new user interfaces that utilize touch technology, particularly multi-touch

- ✓ Attempts to create a competitive advantage
 - ✓ Lower costs for related components and materials
 - ✓ Easier cleaning and maintenance
 - ✓ Improved flexibility for customization and upgrades
 - ✓ Innovation for touch panel technology, materials, and adjunct technologies
- Software and hardware improvements promote touch, such as Window 7 with multi-touch included

III. Competitive factors

Displax launched its first innovative product in 2004, when this market was still inexistent. This circumstance enabled Displax to take advantage of some competitive advantages with regard to its main competitors, such as the experience in multi-touch technology and interactive systems; the expertise and cumulated know-how of their investigation team; and the recognition of their brand in the market.

Still according to Jenifer Colegrove, there are many competing touch technologies with new solutions being commercialized. In her opinion, there is no perfect touch screen technology and the choice of technology is highly dependent on application and/or size requirements.

Displax is using optical technology on its multi-touch table **Oqtopus**, although many different technologies are being used in the production of this application. Besides Optical Imaging, the most common technologies used in multi-touch tables are FTIR, Infrared and Projected capacitive. Table 3, Appendix II compares touch capabilities by technology.

Main competitors

Displax main competitors are **Microsoft Surface 2** and **PQ Labs**. There are others, but they provide lower quality solutions. The table below lists the most relevant competitors of Displax in the market (see Appendix III for a comparative analysis).

Displax has recently launched two new products in the market (see Appendix III) – **VERSUS** and **CUBUS** – which are very similar to **OQTOPUS** in what comes to functionality, although they have few particularities that make them look like line extensions. “Line extensions are often designed to establish points of parity with current offerings competing in the parent brand category, as well as to create points of difference in other areas (...)”⁹. Thus, “these types of line extensions may be particularly likely to result in cannibalization”, although this may not be “necessarily undesirable” because it can be a way of sustaining the clients attached to that line extension instead of switching to the competing brand.¹⁰

PORTER’S FIVE FORCES

In order to better analyze the attractiveness and likely-profitability of the multi-touch industry I will use Michael Porter’s Five Forces Analysis Model, which assumes that five important forces determine the competitive power in a business: supplier power, buyer power, competitive rivalry, threat of substitutes, and threat of new entrants (see Figure 1, Appendix IV).

Supplier power

The differentiation factor of Displax’s products results from Displax efforts and resources. When the company needs more critical components, the relationship

⁹ Keller, Kevin Lane; Apéria, Tony; Georgson, Mats; Strategic Brand Management – A European Perspective

¹⁰ Keller, Kevin Lane; Apéria, Tony; Georgson, Mats; Strategic Brand Management – A European Perspective

established between Displax and its 'suppliers' become a partnership of synergies rather than a supply relationship, whereupon it is not subject to an imposing position.

Buyer power

Since the multi-touch screen industry is quite recent and has therefore only a few players acting, the power of the commercial relationship still lies on Displax side. However, more and more the trend is a towering number of players entering the market, which will lead to a transfer of power onto the customers.

Competitive rivalry

There are an interesting number of multi-touch technology manufacturers (see Table 2), although there are differences among them. The best part of the market share goes for displays of small dimension (such as smartphones and tablets until 10''); then another 'slice' for personal computers with a display of a maximum of 22''; finally, the smallest but expanding segment is for 30'' or more displays and this is where Displax operates. As reported above, Displax and PQ Labs are the biggest players in this segment. However, there are other competitors with different solutions and technologies, though their products are inferior.

Threat of substitutes

It is difficult to find a perfect substitute of such an innovative tool of interactive marketing as these multi-touch multimedia displays. Digital signage displays (i.e. non-interactive multimedia contents) as substitute products, although it is a decreasing market because interactivity is a highly valuable feature. Nevertheless, other ways of distributing contents – such as having an LCD displaying some information, or

updating news via Bluetooth and Wi-Fi into mobile phones – are also potential substitutes.

Threat of new entrants

Multi-touch market is becoming increasingly attractive as it is in fast expansion, which is good news for Displax but also for the entrance of new players in the market.

These players can be split into two main groups:

- Local distributors/resellers – in one hand they compete with Displax’s distributors; on the other hand this enables Displax to choose among a wide number of potential partners. It requires some technical know-how but is not a strong barrier to new entrants.
- Manufacturers – the market demands a high level of know-how and huge investment in R&D for this group of players. This means that entering this market is only possible for companies who afford high resources, such as Microsoft, Samsung or Hyundai, and this of course represents a strong hurdle to the entrance of new players.

SWOT ANALYSIS

The overall evaluation of a company’s strengths, weaknesses, opportunities and threats is called SWOT analysis and it involves monitoring the external and internal marketing environment.¹¹ Below is the SWOT analysis for Displax Oqtopus. The next step is to look at the SWOT analysis and use it as a “kick off” strategy formulation¹², as follows:

¹¹ Kotler, Philip, Keller, Kevin Lane, 12e, Marketing Management

¹² www.mindtools.com

SWOT ANALYSIS	HOW TO:
<p>STRENGTHS</p> <ul style="list-style-type: none"> • Expertise in display and sensing technology • Internal R&D team • High brand awareness in the touch screen market • Recognition of DISPLAX as a very innovative company by the experts in the market¹³ 	<p>Make the most of these strengths?</p> <ul style="list-style-type: none"> • Investing in R&D • Reinforcing the R&D team • Being present in important events and fairs in the industry
<p>WEAKNESSES</p> <ul style="list-style-type: none"> • Robust design • High price • Main competitor Microsoft Surface 2 has relevant superior quality and brand image 	<p>Circumvent the weaknesses?</p> <ul style="list-style-type: none"> • Improving quality and optimizing design • Multi-touch modules typically enjoy higher prices than single-touch, but with increasing competition, price tend to decrease
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> • Multitouch display market is not much developed in Spain • The multi-touch market is growing fast (forecast for this market is that multi-touch will grow to about \$4.2 billion by 2015, 47% of total touch module revenues) 	<p>Capitalize the opportunities?</p> <ul style="list-style-type: none"> • Finding new market sectors to sell the products • Communicating on the advantages of Multi-touch technology
<p>THREATS</p> <ul style="list-style-type: none"> • New rising competitors with competitive 	<p>Manage the threats?</p> <ul style="list-style-type: none"> • Being innovative

¹³ DISPLAX won the INAVATION AWARD for the Most InAVative Digital Signage Project category with the “Optimus Concept Store” project in 2010 and with “Meditel Flagship Store” project in 2011

prices

- Developments in technology may change the market beyond Displax ability to adapt
- Choice of technology highly dependent on application and/or size requirements

- Being aware of customers needs
- Launching new products according to customers' needs

MARKETING PLAN FOR OQTOPUS IN THE SPANISH MARKET

A. STRATEGIC TRIANGLE

Market Segmentation

Displax focuses its attention in business markets, either in the national market and internationally. In order to perform the segmentation process several issues were evaluated and taken into consideration.

In a first step it was useful to be aware of Displax “mission, strengths, core competencies and resources”¹⁴.

Secondly, it was necessary to form business segments that are internally homogeneous yet exhibit some differences.¹⁵ For that purpose, a number of business market variables were considered and a combination of both customer characteristics and product-related approaches have been chosen.¹⁶ The first variables (filter 1) to be applied (simultaneously) are the ‘**end use application**’ and the ‘**perceived benefits**’¹⁷ of Oqtopus. When answering the questions ‘who are our clients’ and ‘what do they care about’, one may find that the majority of Displax business clients have in common one out of two needs. Either they seek a way of involving potential

¹⁴ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

¹⁵ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

¹⁶ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

¹⁷ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

customers into a more **interactive brand experience** that may bring them closer to their brands – and finally buy their products; or they look for a valuable product to improve the **interaction/communication process** within the company or between Displax clients and their audience. The **industry type** (filter 2) and **industry position** (filter 3) were the variables based in customer characteristics that were considered in this segmentation process.

Third, was then up to **evaluate and identifying the market segments** that best fit into the variables that were indicated according to Displax nature.

Thus, the following segments have been finally selected:

Segment A – Telecommunications

Segment B – Automobile sector

The automotive sector is of great importance in the Spanish economy, with a turn over of 3.3% of the GDP in 2009.¹⁸

Segment C – Pharmaceutical sector

Spain has an established pharmaceutical industry. In 2010 there were about 450 pharmaceutical companies in the country.¹⁹

Segment D – Museums

The total expenditure in tourism in Spain accounted over 93.198 million euros in 2010, and the expenditure cultural services were 3.095 million euros.²⁰ Currently, there are over 1,400 museums in Spain²¹. Moreover, the presence in museums may represent a huge opportunity of exposure to a great amount of spanish and foreign tourists, which means a potential interaction with Oqtopus and might consequently lead to a higher interest for Displax multi-touch systems.

¹⁸ http://www.investinspain.org/icex/cda/controller/interes/0,5464,5322992_6774890_6279208_0,00.html

¹⁹ http://www.investinspain.org/icex/cda/controller/interes/0,5464,5322992_6261749_6279208_0,00.html

²⁰ <http://www.turismoencifras.info/>

²¹ <http://www.spain.info/en/conoce/museo/>

Segment E – TV studios

Targeting

After having identified and selected the segments to target, they will be divided and grouped into two new extensive groups, according to the underlying needs that were previously described. Thereby, those segments that seek a way of involving potential customers into an **interactive brand/product experience** that may bring them closer to their brands – segments A, B and D – will both constitute the new **segment X**; for those segments that aim to improve the **interaction/communication process** within the company or between Displax clients and their audience – segments C and E – will belong to the new **segment Y**.

This means that a **differentiated marketing strategy** will be developed for each of these new segments X and Y.

Positioning

Since 2000 DISPLAX has developed a business model targeted to the new communication channels market, focusing specifically on interactive systems, and believes that interactive systems will become even more mainstream and will play a key role in brand communication with consumers at retail points.²²

The ideal Displax customer would be that company who buys an integrated project, exploiting all capabilities of Displax as it can design and develop integrated solutions that add more value to its final client and its customers. However. And regarding the particular case of Oqtopus, and according to Displax innovative “DNA”, its customers should perceive it to be the *“state-of-the-art multi-touch table that truly engage the audience with your brand, providing them an unforgettable experience of*

²² www.displax.com

communication and interactivity". This positioning is thereby coherent with Displax motto "touching the future".

B. Marketing-Mix

Product

DISPLAX Oqtopus is an interactive multi-touch table, all in one (hardware, technology and software included).²³

As stated above, Displax must be aware with possible cannibalism of some of its latest launches (Versus and Cubus) over Oqtopus because they are very similar products with additional features. Perhaps the solution may be to create a wider product line under a product brand that consist of a small number of products that satisfy the same need but differ from one another in only few things.

In such a technological market, after-sales service may be a crucial issue to assure appropriate technical support and consequence customer satisfaction. For these purpose, Displax must have a quick and efficient response to every support requests. Within this context, the idea of a 'green number' should be analyzed and an easy completion form should be available at Displax website, similarly to what happens with the existing one (Appendix V).

Distribution

Currently, Displax is operating differently in Portugal and in international markets. Whereas it has a more direct approach with its final clients in the national market, Displax operations in other countries are mainly processed with the help of

²³ Detailed information on Oqtopus in Appendix V

intermediates or authorized distributors, who then sell Displax products to their customers. Despite this, Displax uses a mixed approach in the Spanish market, either contacting directly its final clients or selling its products to distributors or other intermediates that then resell the products to customers.

Two types of channels will then be considered for Oqtopus commercialization in the Spanish market: direct channels and indirect channels.²⁴ Through direct channels, the product will go directly from Displax sales department to the customer, whereas through indirect channels, Oqtopus will have the intermediation of other entities.²⁵ For that role, Displax has its sales force in Spain working in the prospection of corporate customers and also with Displax major client in that market – El Corte Ingles – which has a specific department devoted to sell integrated or singular interactivity projects/products to final customers.

Pricing

Oqtopus pricing strategy must be consistent with the brand/product positioning in that market and the image that the company wants to be perceived by current and potential customers²⁶. The objective is to introduce a market skimming pricing, setting a relatively high price to skim maximum revenues from the market.²⁷

Displax Oqtopus is a customizable product and therefore may have different prices according to individual specifications that companies might require. To simplify this issue, let's assume the basic product with a 42" screen, including the hardware and the software and an average out of €5,500 (price ranges between €4,500-6,500). However, the price may also reflect other issues such as shipping and export costs, which may lead to a price increase.

²⁴ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

²⁵ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

²⁶ Keegan, Warren J., and Mark C. Green. 2008. *Global Marketing*. 5th ed. Pearson International

²⁷ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

Communication Decisions

An **Integrated Marketing Communication (IMC)** plan will be designed to market Oqtopus in Spain, in order to achieve a coordination of content and delivery of all the marketing messages in all media that ensure consistency and support the positioning and objective of growth market penetration and development.²⁸

Below are the IMC tools that are going to be used in order to reach above-mentioned goals:

Advertising

In the first year, and because of high costs, advertising will be limited to Internet, specialty magazines and newspaper and perhaps one or other TV channels with cards at the end of TV programs related with new technology.

Personal selling

Displax sales force in Spain will have a crucial role in the implementation on this plan through client prospection, after sale service and being the main intermediary between Displax clients and the headquarters.

Direct marketing

A monthly newsletter will be sent to Displax database of clients and those who are not but still have interest for Displax activity. E-mail and Internet will also play an important role in establishing contact with customers.

Public relations

Displax will be a frequent present in the most important events and fairs of the field in Spain in order to increase brand notoriety in that market.

New Media

²⁸ Wood, Marian B. 2007. *Essential Guide to Marketing Planning*. Harlow: Pearson Education Limited.

Given the exponential growth of social media platforms, as well as the fact that Displax is a highly innovative company, it will certainly be an active member in these means, such as blogs, Facebook and Twitter.

C. Implementation Plan

Man

The Marketing Plan will be implemented together with Displax sales force team (two people) in Spain under the guidelines, support and orientation of the Marketing team based in Portugal.

Minute

This Marketing plan has the duration of one year, starting in September 2011.

Money

The cost for the implementation of this Marketing plan will have into consideration both the prices practiced in Portugal and Spain.

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www.mindtools.com

www.spainbusiness.com

APPENDIX I

TOUCH TERMINOLOGY

According to 3M²⁹,

Single Touch ‘occurs when a finger or stylus creates a touch event on the surface of a touch sensor or within a touch field so it is detected by the touch controller and the application can determine the X, Y coordinates of the touch event. These technologies have been integrated into millions of devices and typically do not have the ability to detect or resolve more than a single touch point at a time as part of their standard configuration.’

Multi-touch ‘refers to a touch system's ability to simultaneously detect and resolve a minimum of 3+ touch points. All 3 or more touches are detected and fully resolved resulting in a dramatically improved touch experience. Multi-touch is considered by many to become a widely used interface mainly because of the speed, efficiency and intuitiveness of the technology.’

THE TECHNOLOGY

DISPLAX™ Multi-touch Technology turns any non-conductive material into an interactive multi-touch surface. Based on projected capacitive technology and has been developed on a transparent thinner-than-paper polymer film, which can be applied to a variety of flat and curved surfaces including glass, plastic and wood. It works by using a grid of nanowires embedded in a thinner-than-paper polymer film. Each time a finger is placed on the screen or a user blows onto the surface, a small electrical disturbance is detected allowing the microprocessor controller to pinpoint the movement or direction of the airflow.³⁰

²⁹ http://solutions.3m.com/wps/portal/3M/en_US/TouchTopics/Home/Terminology/WhatIsMultitouch/

³⁰ www.displax.com

APPENDIX II

Table 1

Structure of GDP (% of total, current prices)			
	2007	2008	2009
Agriculture and fishery	2.94	2.86	2.62
Industry	17.87	17.39	15.32
Construction	12.19	11.55	10.97
Services	67.00	68.20	71.09

Source: Eurostat, 2009. 3Q 2009

Table 2

Touch Screen Manufacturers by Technology	
Technology/Feature	Number of Companies
Acoustic (SAW)	9
Acoustic (Bending wave)	3
Combo	4
Digitizer	6
In-cell	6
Infrared	13
Optical Imaging	10
Projected Capacitive	27
Resistive	64
Surface Capacitive	22
Z-Other Technology	6
Multi-touch	50
Tactile feedback	4
Controller IC only	16

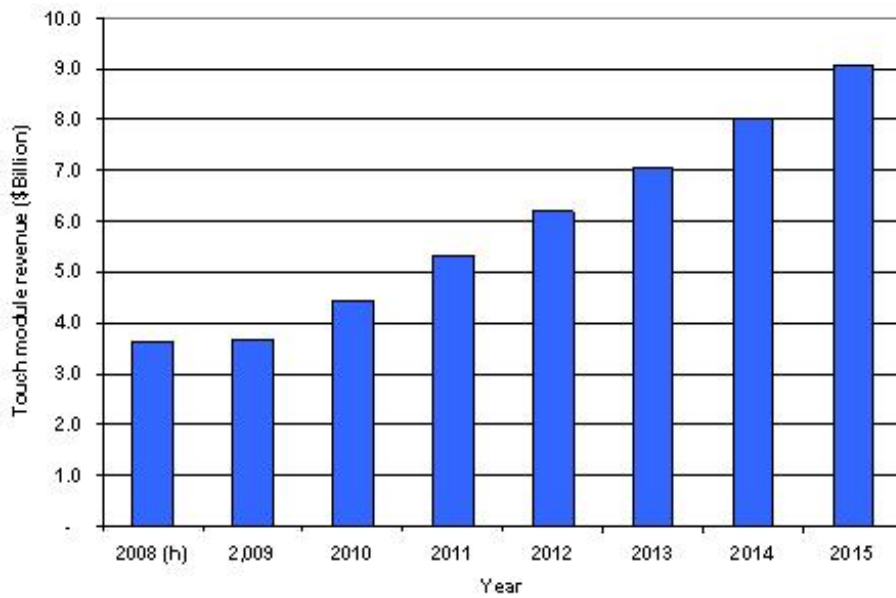
Source: DisplaySearch 2009 *Touch Panel Market Analysis*

Table 3

	Resistive	Capacitive	Surface Capacitive	Infrared	Acoustic (Surface Wave)	Acoustic (Bending Wave)	Digitizer (Electronic Resonance)	Optical Imaging	Combo (Projected Capacitive + Digitizer)	In-Cell
Transmissivity	fair	good	good	excellent	excellent	excellent	not good	excellent	fair	excellent
Touch Resolution	excellent	fair	good		good	good	excellent	good	excellent	Current! high
Durability	fair	excellent	excellent	excellent	excellent	excellent	excellent	excellent	excellent	excellent
Cost	low	medium	medium	high	medium	medium	medium	medium	high	
Handwriting	excellent		good		fair		excellent	good	excellent	excellent
Typical Display Size	1-20"	2-20"	10-20"	<3", 20-150"	10-36"	3-42"	5-19"	14-100"	10-20"	<20"
Other Display Sizes	Up to 60"	Also up to 100"		Moving to 5-10"		Moving to 3-8"	Moving to 3-8"	Moving to 10-18"	Moving to 6-10"	
Multi-touch	Not typically, but some demonstrated	Yes	No	Yes	Not typically, but Elo demoed in 2009	Not typically, but some demonstrated	No	Yes	Yes	Yes
Input Method	Finger or stylus	Finger or conductive pen	Conductive pen, bare finger	Finger or tick stylus	Finger or soft tip pen	Anything	Electronic pen	Anything	Finger or electronic pen	Anything
Challenges	Less durable, needs forceful touch but no sharp objects	Can't use with thick gloves, only in demo	Can't use with gloves	Sunlight, contamination, high bezel	Rain, dust contamination	Needs forceful touch, can't detect touch's stop	Not for fingers	Won't be small	Doesn't work with plastic or thick gloves	High cost, some new forceful touch gloves

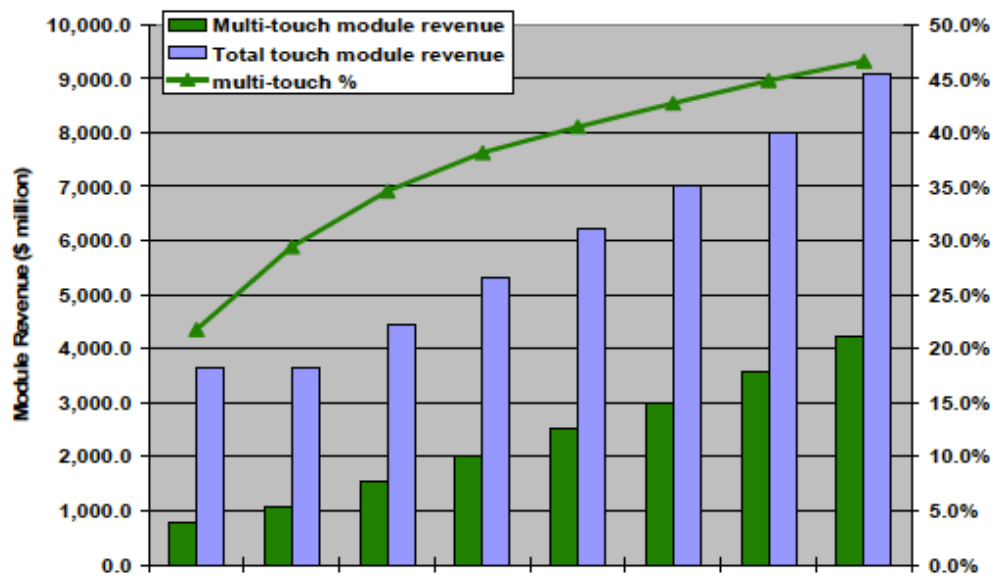
Source: Adaptation from DisplaySearch, 2009

Figure 1



Source: DisplaySearch 2009 *Touch Panel Market Analysis*

Figure 2



Source: DisplaySearch 2009 *Touch Panel Market Analysis*

APPENDIX III

Comparative Table of Oqtopus main competitors

Company	Detection Method	Touch Technology	Screen Size	Minimum Detectable Object Size	Sampling/Response Time	Connection options	Touch Points	Detection Method	OS	Warranty	Special features	Price (approximately)
Displax - Oqtopus	Optical	IPS (In-Plane-Switching)	32" up to 103"			USB	Up to 16 touch points simultaneously	Finger, gloved hand, and stylus	Windows 7	1 year	Portable, easy to install, all-in-one	€4500-6500
PQ Labs Itable		LED Cell Imaging	42"	+ - 1.5mm	7ms - 12ms	USB	Up to 32 touch points simultaneously	Finger, gloved hand or any other pointer	Windows 2000, XP, Vista, Windows 7, Mac OS X	1 year		€3,500-4,800
Microsoft Surface 2	Pixel Sense	Rear projection	46"	Identifies objects on screen			Up to 50 touch points simultaneously	Finger, hands, and objects placed on the screen			'Wow' factor, brand image	€5,200

Main competitors of Oqtopus



Oqtopus – Displax



iTable – PQLabs



Surface 2 – Microsoft

Source: Google images

Displax new products



Versus – Displax

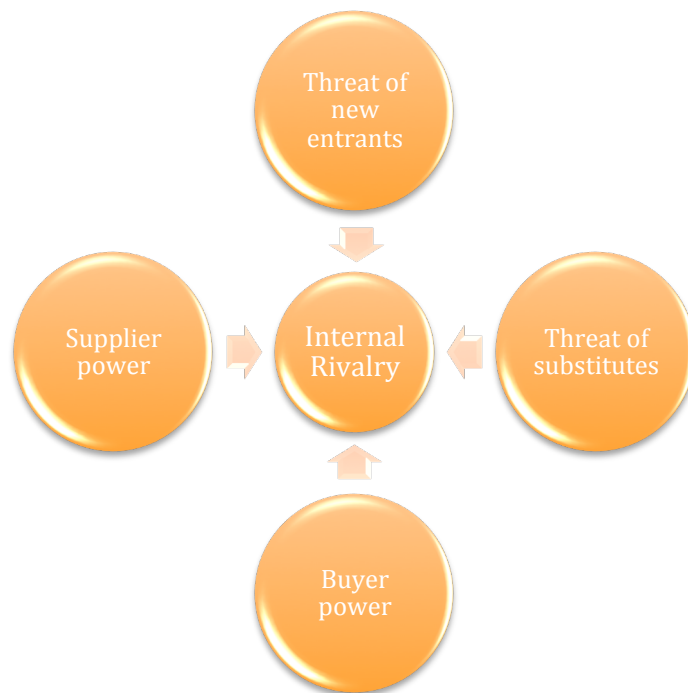


Cubus – Displax

Source: Google images and www.displax.com, respectively

APPENDIX IV

Figure 1



Source: Adaptation of Michael Porter's Five Forces Model

APPENDIX V

PRODUCT

Detailed Information on Oqtopus³¹

Oqtopus is an interactive table using Displax Overlay Multitouch OEM³².

BENEFITS

- Elegant design and slim profile
- Ready to go multitouch table
- Portable table
- New multimedia multitouch contents
- High quality LCD image
- Easily programmable Windows 7 gestures

FEATURES

- True and reliable multitouch technology
- 4 independent touches
- Made for use with 42'' LCD display
- Windows 7 (with multitouch functionality available)
- Very fast and accurate touch technology

SPECIFICATIONS

- Measures: 102 x 110 x 67 cm
- Detection method: Optical
- Input method: Finger, stylus and gloved hand
- Operating system: Microsoft Windows 7
- Touch force: No pressure required
- Mouse control options: Microsoft Windows 7 Touch Gestures
- Permitted graphic resolution: Unaffected by computer display resolution

NOTE: LCD and PC only ship when required

³¹ <http://www.displax.com/index.php#/en/products/oqtopus.html>

³² <http://www.edigma.com/en/products/displax-oqtopus.html>

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